

be added respecting the comparative development and progress of the two plants at other seasons.

Two other smaller lochs in the same vicinity were not observed to present any appearance of the productions in question.

In connection with the subject of this short notice, it may be stated, that during a visit to Ben Muich Dhu in 1846, the appearance presented by a patch of snow at 3500 feet of elevation, attracted attention. It seemed as if sprinkled over with soot; a quantity of the black matter was collected, and found to consist in part of the following *Diatomaceæ*: *Eunotia triodon*, *Navicula viridula*?, *N. curvula*?, and *Meridion circulare*, and along with them *Protococcus nivalis* in very small proportion; the remainder consisted of inorganic matter, the nature of which was not ascertained.

III.—*Stirpes Cryptogamæ Sarnienses; or Contributions towards the Cryptogamic Flora of Guernsey.* By the Rev. T. SALWEY, Oswestry\*.

So much has been done by Mr. Babington in his 'Primitiæ Floræ Sarnicæ' for the illustration of the phænogamous flora of the Channel Islands, that perhaps a brief notice of the cryptogamic botany of one of the islands of this group may be acceptable to some of the Members of the Botanical Society. Guernsey does not appear to be very prolific in cryptogamic plants—a variety of causes tend to produce this result—the open nature of the country; the great paucity of wood; the general dryness of the soil from the circumstance of all the rocks being of the primitive formation; and the very great proportion of the land being under the cultivation either of the spade or plough; all these circumstances are inimical to the growth and perfect development of cryptogamic plants. There are no woods in the island, and the soil even of the orchards is in general under the culture of the spade. It is at once evident therefore that the great variety of Agarics, Boleti, and the innumerable other Fungi which are found so abundantly in the extensive woods and rich pastures of England, have no corresponding habitats here in which to grow. The same reason limits the number of Musci, Hepaticæ and Jungermannia, whilst from the few brooks and ponds which are found in the island it is equally hopeless to expect a great number of freshwater Algæ. Even the lichens do not exhibit that luxuriance of growth which we find in the deep woods and glens of the Cambrian mountains. Thus the common *Parmelia saxatilis* is seldom found here in fruit, and the few

\* Read before the Botanical Society of Edinburgh, Nov. 9th, 1818.

meagre specimens of *Sticta pulmonaria* are also without apothecia. The abundance of their orchards led me to expect that I should discover here the *Parmelia chrysophthalma* which is found in the south of England; but my researches failed in discovering more than a single specimen of this plant in an orchard in Sark. My friend Mr. Lukis some years ago once found also a single specimen of the same plant in the northern part of Guernsey. This island however possesses much to interest the lichenist from more northern regions. He will find here abundance of the *Roccella tinctoria*, and will also meet with *Lecanora milvina*, *Lecidea Salveii*, *Parmelia leucomelas*, *Sticta aurata*, and *Porina pustulata* of Ach.,—a plant hitherto a stranger to our British flora.

In the minute epiphyllous fungi the island is more prolific than I have found any locality of the same extent in England—some few species are in extreme abundance and very fine, as the *Puccinia Cotyledonis* and *Æcidium Bunii*—the *Dothidea rubra* also is much more highly developed than I ever found it in England, thus showing the influence of a southern climate on this class of plants. There was one circumstance however with respect to this tribe of plants which much struck me. In Shropshire and Herefordshire, as well as in Wales, it is perhaps not possible to find a sycamore-tree of which the leaves are not blackened with numerous specimens of the *Rhytisma acerinum*; whilst in Guernsey I could not even detect a single specimen, although I examined every tree I met with after my attention was attracted by this circumstance. The leaves of every sycamore-tree in the island are as perfectly free from this discolouring epiphyte as those of the plane-tree. One or two of the Uredines which I have sent to Mr. Berkeley he thinks may prove to be new species. Amongst this tribe of plants he has already named as new the *Depazea Caricæ* on the leaves of the common fig-tree, and the *Ustilago Salveii* on young plants of *Dactylon glomeratus*.

The richest part of the cryptogamic flora of Guernsey will doubtless be found in the marine Algæ. Were any one well acquainted with this department of botany to be long resident here, I feel little doubt that some interesting discoveries might be made. The few opportunities I have had of studying them from short and occasional visits to the sea-coast, and this in only one or two localities, have given me little opportunity of becoming much acquainted with this branch of botany; whilst during the time of my residence in this island, the state of my health confined me so much to the house, that my botanical researches in every branch were greatly interrupted. The list therefore which I have sent you is only to be considered as “contributions” towards the cryptogamic flora of Guernsey, of which it is

hoped that some native of the island will be induced to give us a more complete account, for what a stranger is enabled to discover in a brief visit can only be a small portion of the botanical treasures of the island.

I feel that I cannot conclude this short notice without expressing my best thanks to my friends Messrs. Borrer, Berkeley, Ralfs and Wilson for kindly naming such specimens as I was in doubt about.

*List of Guernsey Cryptogamic Plants, with a few notices upon some of them.*

*Musci.*

Phascum crispum ; $\beta$ . rostellatum.	churchyard and upon elm-trees at
subulatum.	the bottom of the Robais road.
Pottia Heimii. Rocks in the parish	Orthotrichum tenellum. Do. do.
of St. Peter du Bois on the coast.	Bryum argenteum.
{ Gymnostomum fasciculare, <i>Hook.</i> and <i>Tay.</i> in part ( <i>Wilson</i> ).	capillare.
	cæspitium.
{ Physcomitrium ericetorum, <i>Bruch</i> and <i>Schimper</i> , var. ( <i>Wilson</i> ).	erythrocarpon. Walls about
	St. Peter's Port.
Gymnostomum pyriforme.	ligulatum.
microstomum.	hornum.
Weissia fugax. In a cave at Petit Bo.	cuspidatum.
controversa.	Bartramia pomiformis.
Grimmia pulvinata.	Pterigonium filiforme.
maritima.	gracile.
Ceratodon purpureus.	Hypnum serpens.
Trichostomum canescens.	purum.
Dicranum bryoides.	plumosum.
adiantoides.	sericeum.
taxifolium.	alopecurum.
squarrosum.	mysuroides.
flexuosum.	proliferum.
scoparium.	prælongum.
heteromallum.	rutabulum.
Campelopus densus. Jerbourg.	ruscifolium.
Tortula muralis.	striatum.
ruralis ; $\beta$ . lævipila.	cuspidatum.
aloides.	triquetrum.
Polytrichum commune.	squarrosum.
juniperinum.	filicinum.
aloides.	scorpioides.
Entosthodon Templetoni. Road lead-	cupressiforme.
ing down to Petit Bo from the	pumilum.
east.	Teesdalii. Cave in Petit Bo.
Funaria hygrometrica.	resupinatum. Jerbourg.
Orthotrichum diaphanum. Catêl	

*Hepaticæ.*

Riccia crystallina.	Marchantia hemisphærica.
lamellosa.	Jungermannia bicuspidata.
Anthoceros punctatus.	pusilla.
Marchantia polymorpha.	albicans.



Jungermannia complanata.  
 polyanthos.  
 viticulosa.  
 bidentata.  
 heterophylla.  
 serpyllifolia.

Jungermannia dilatata.  
 tamarisci.  
 β. monilensis.  
 epiphylla.  
 furcata.

*Lichenes.*

Usnea plicata.  
 Evernia flavicans.  
 Ramalina calicaris.  
 α. fraxinea.  
 β. fastigiata.

Ramalina pollinaria.  
 polymorpha.  
 scopulorum.  
 Roccella tinctoria.  
 fuciformis.

I cannot agree with the authors who unite these two plants. If intermediate states are to be considered as a sufficient ground for uniting what have hitherto been considered distinct species, then must a great many more of the *Cladonia* be united than is now done, for between the greater part of the different species in this genus there are so many intermediate states, that it is extremely difficult to know to what species to refer many specimens. Manufacturers have noticed that the *tinctoria* is very superior as a dye to the *fuciformis*, and my friend Mr. Lukis has pointed out to me a distinction between these two plants which I was not before aware of, but which the examination of a great number of specimens enabled me to confirm; viz. that the *sap* of *tinctoria* is of a deep yellow, staining the fingers when gathered, whereas that of the *fuciformis* is not so. It is perhaps to be regretted that chemical tests have not been resorted to in endeavouring to distinguish between nearly allied plants.

Cetraria sepincola.  
 Peltigera resupinata.  
 β. parilis.  
 canina.  
 β. pusilla; spuria, *Ach.*  
 rufescens.  
 polydactyla.  
 Sticta aurata. Jerbourg, *Mr. Lukis*;  
 on the rocks N. of the Eperquerie,  
 Sark, *T. S.*  
 Sticta fuliginosa.  
 limbata.  
 scrobiculata.  
 pulmonaria.  
 glomulifera.  
 herbacea.  
 Parmelia perforata.  
 perlata.  
 tiliacea.  
 Borreri.  
 saxatilis.  
 β. omphalodes.  
 γ. sulcata, *Fl. Hib.*  
 physodes.

Parmelia olivacea.  
 caperata.  
 rugosa, *Fl. Hib.*  
 conspersa.  
 parietina.  
 i. concolor; candelaria,  
*Ach.*  
 lævigata, *Ach. & E. B.*  
 scortea, *do.*  
 chrysophthalma. In an orchard at Sark.  
 leucomela. Jerbourg and  
 S.W. point of Rocquaine  
 Bay, *Mr. Lukis.*  
 ciliaris.  
 aquila.  
 pulverulenta.  
 speciosa.  
 stellaris.  
 β. hispida; Lichen tenellus,  
*E. B.*  
 erosa, *Suppl. to E. Bot.*  
 2807.

There are two varieties (unless indeed they are distinct species) of this plant in Guernsey. In the one the thallus exhibits the same loose mode of growth that it does with us in England and Wales, but has no sorediæ; but in the other it adheres so closely either to the rock or tree on which it grows that it is very difficult to detach the specimen. The *surface* too of this latter var.?, and not the edges, is copiously sprinkled with sorediæ. In the description given of the *erosa* in the 'Suppl. to E. B.' it is observed, "that sometimes the edges are raised, and producing mealy granules on the *under* side, assume, although not hollow, an appearance approaching to that common in *P. tenella*." The sorediæ however of the Guernsey var. of this plant are on the *upper* surface of the thallus. The hue of the thallus too, which is of a very pale whitish green, and its being more frequently found investing the dark crevices of rocks than growing on trees, seems to point out a difference of species. The shields also of the former variety are decidedly black, whilst those of the latter, though very minute in my specimens, are of a brown colour. The former variety I have not found in fruit in Guernsey.

*Parmelia obscura.*

*a. cycloselis.*

*β. ulothrix.*

*plumbea.*

*lanuginosa.*

*brunnea.*

*pezizoides, Suppl. to E. B.*

*Parmelia crassa.*

*coarctata.*

*saxicola.*

*elegans.*

*murorum.*

*β. miniata.*

There is a very beautiful variety of this plant forming extremely thin extensive patches on the rocks of a bright orange colour. The thallus is almost wholly minutely granular, and without apothecia. To the naked eye it looks only like an orange stain upon the rock.

*Parmelia fulgens.* Downs near the sea on the N. of the island, *Miss Lukis.*

*Parmelia circinata.*

*cervina.*

*β. squamulosa.*

*tartarea.*

*carneo-lutea.* On an elm-tree in the village above Saint's Bay.

*subfusca.*

*atra.*

*cinerea.*

*badia; β. milvina.* Jerbourg.

*sophodes.*

—? *exigua?*

Crust cartilaginous, of a dark green colour, having somewhat of a

leaden hue towards the edges, when dry. Apothecia hemispherical, dark brown, with a raised somewhat crenulate border of a lighter hue than the thallus. On the rocks at Dixcart Bay, Sark.

*Parmelia hæmatomma.*

*varia, and*

*δ. polytropa.*

*vitellina.*

*ferruginea.*

*sordida; a. glaucoma.*

*β. sulphurea.*

*impolita; Arthonia pruinosa, Ach.*

*scruposa.*

*Gyalecta cupularis; Lichen marmoreus, E. B.*

*Cladonia endiviæfolia.*

- Cladonia* aleicornis.  
     pyxidata.  
     fimbriata.  
     furcata.  
     rangiferina.  
     gracilis; *b.* hybrida; cervi-  
     cornis, *E. B.*  
*Bæomyces* rufus, *E. B.*  
     anomalus, *Fl. Hib.*  
*Biatora* atrorufa.  
     vernalis; *a.* luteola.  
 A very beautiful state of this with  
 reddish shields which are often  
 proliferous, and with a waved bor-  
 der, grows on decaying tufts of  
 thrift in Sark.  
*Biatora* rivulosa; *a.* saxicola.  
     β. corticola.  
     ———?  
 Between *uliginosa* and *synothea*, *E. B.*  
 Crust dark green, consisting of in-  
 numerable very minute granules  
 or scales, forming a spongy crust.  
 Apothecium black, globular, finally  
 flat, and with a pale border usually  
 sprinkled over with the minute  
 scales of the crust. On walls.  
*Biatora* quernea. Barren.  
     lucida.  
     Salveii; *Lecidea*, *Suppl. to*  
     *E. B.*  
*Lecidea* canescens.  
     vesicularis.  
     albocærulescens; *Lecid. cæ-*  
     sia, *Ach.*  
     contigua; *a.* disciformis.  
     lapidica.  
     atro-alba; *ε.* subconcentrica;  
     Lichen concentricus, *E. B.*  
     fusco-atra.  
     confluens.  
     geographica.  
     premnea.  
     enteroleuca; elæochroma.  
*Lecidea* albo-atra; *a.* corticola.  
     *c.* saxicola; epi-  
     polius, *E. B.*  
     sabuletorum; *γ.* conio-  
     citrinella; scabrosus, *E. B.*  
*Umbilicaria* pustulata. Near Petit  
 Bo, *Mr. Lukis.*  
*Opegrapha* saxatilis.  
     scripta.  
     dendritica.  
*Coniocarpon* cinnabarinum.  
*Sphærophoron* compressum.  
*Endocarpon* miniatum.  
     pulchellum, *E. B. Suppl.*  
     2602. On some elm-  
     trees in the lane lead-  
     ing from Havilland to  
     Fermain Bay.  
*Sagedia* fuscella.  
*Pertusaria* communis.  
     fallax.  
     pustulata, *Ach.* On an  
     ash-tree by the side of  
     the road at Rousaitre.  
*Verrucaria* epigæa.  
     muralis.  
     umbrina.  
     maura.  
     nitida.  
     epidermidis.  
     punctiformis.  
     leucocephala.  
     viridula.  
     olivacea.  
     acrotella, *Fl. Hib.*  
*Collema* nigrum.  
     crispum.  
     cristatum.  
     lacerum.  
     subtile.  
     muscicolum.  
     plicatile.  
     nigrescens.  
     ceranoides.

*Characeæ.*

- Chara* vulgaris.  
     *Chara* pulchella. Sark.

*Algæ.*

- Cystoseira* granulata.  
     fibrosa.  
*Halidrys* siliquosa.  
*Fucus* vesiculosus.  
     serratus.  
     nodosus.  
     canaliculatus.  
*Himantalia* lorea.  
*Lichina* pygmæa.  
*Alaria* esculenta.  
*Laminaria* digitata.  
     saccharina.  
*Chordaria* flagelliformis.  
*Chorda* filum; *β.* thrix.  
*Dictyota* dichotoma.  
*Furcellaria* fastigiata.



- Delesseria ruscifolia.*  
*Rhodomelia bifida.*  
     *laciniata.*  
     *jubata.*  
     *palmata*;  $\beta$ . *sarniensis.*  
*Plocamium coccineum.*  
*Rhodomela subfusca.*  
*Laurencia tenuissima.*  
*Chylocladia ovalis.*  
     *articulata.*  
*Gigartina purpurascens.*  
*Chondrus crispus.*  
*Gelidium corneum.*  
*Dumontia filiformis.*  
*Porphyra vulgaris.*  
*Ulva lactuca.*  
     *linza.*  
     *crispa.*  
*Enteromorpha intestinalis.*  
*Bangia fuscopurpurea.* Scarce.  
*Codium tomentosum.*  
*Vaucheria velutina.*  
     *sessilis.*  
*Cladostephus verticillatus.*  
     *spongiosus.*  
*Sphacelaria scoparia.*  
     *olivacea.* In a cave near  
     the gentlemen's bath-  
     ing-place.  
*Ectocarpus littoralis.*  
     *siliculosus.*  
     *tomentosus.* Grand Cobo.  
*Polysiphonia fastigiata.*  
     *thuyoides.*  
     *urceolata.*  
     *byssoides.*  
     *fruticulosa.*  
*Dasya coccinea.*  
*Ceramium rubrum.*  
     *ciliatum.*  
*Griffithsia equisetifolia.*  
  
*Griffithsia setacea.* Fermain Bay.  
     *corallina.* Bay under the  
     Artillery Barracks.  
*Calithamnion polyspermum.*  
     *tetragonum.*  
     *Rothii.*  
*Conferva Linum.* St. Sampson's.  
     *ærea.*  
     *fucicola.*  
     *rupestris.*  
     *glaucescens.*  
     *arcta.*  
     *flexuosa.*  
*Zygnema nitidum.*  
     *quininum.*  
*Scytonema myochrus.* This forms a  
     velvety stratum upon a bank near  
     the sea at Jerbourg. It is of a  
     deep indigo colour.  
*Linghya muralis.*  
*Oscillatoria nigra.*  
*Chroolepus aureus.*  
     *Iolithus.*  
*Trentepohlia purpurea.* In a cave  
     beyond the bathing-place.  
*Corynephora marina.*  
*Palmella botryoides.*  
     *cruenta.*  
*Nostoc commune.*  
     *verrucosum.* In a small ri-  
     vulet in Saint's Bay.  
*Rivularia atra.* Grand Havre.  
*Meloseira nummuloides.* Brook in  
     the N. of the island.  
*Fragilaria pectinalis.* In a well at  
     St. Andrew's.  
*Diatoma fenestratum.* Ditto.  
     *flocculosum.* Ditches near  
     Ivy Castle.  
*Gomphonema ampullaceum.* In a  
     well at St. Andrew's.

*Fungi.*

- Agaricus procerus.*  
     *muscarius.*  
     *coccineus.*  
     *campestris.*  
     *Georgii.* St. Martin's: sold  
     in the market.  
     *orcales.*  
     *Rotula.*  
     *caulicinalis.*  
*Polyporus vulgaris.*  
     *Ribis.*  
     *ulmarius.* In an elm-tree  
     in the village at Saint's  
     Bay.  
  
*Thelephora hirsuta.*  
*Peziza cacaliæ.* On pods of *Mathiola*  
     *sinuata.* Portinifer.  
*Cryptomyces versicolor*; *c. viridis.*  
     St. Sampson's.  
*Dacrymyces stillatus.*  
*Sphæria typhina.*  
     *graminis.*  
     *loniceræ.*  
     *hedericola.*  
     *confluens.* On the decaying  
     trunk of an ash-tree in  
     St. Andrew's parish.  
     *lata.*

- Sphæria concentrica.  
 Myriangium Duriæi, *Berk. & Mont.*  
 On ash-trees in Sark.  
 Phoma asteriscus. On *Heracleum* in  
 Moulin Huet Bay.  
 Dothidea ulmi.  
 rubra.  
 Lycoperdon gemmatum;  $\epsilon$ . furfura-  
 ceum.  
 Scleroderma vulgare.  
 Erysiphe communis.  
 Oidium moniloides.  
 Aregma bulbosum.  
 Puccinia graminis.  
 polygonorum.  
 lychnidearum.  
 Cotyledonis.  
 violarum.  
 Fabæ.  
 prunorum.  
*Æcidium* Bunii.  
 laceratum.  
 primulæ.  
 rubellum.  
 ranunculacearum.  
 Periclymeni. Fermain Bay.  
 Depazea Caricæ. On the leaves of  
 the common fig-tree. *Berk. MSS.*  
 Ustilago Salveii, *Berk. MSS.* On  
 young plants of *Dactylon glome-*  
*ratus.* St. Martin's.  
 Uredo compransori.  
 Petrosellini. On *Sium lati-*  
*folium.*  
 caricina. On *Cyperus longus.*  
 bifrons. On *Rumex obtusifol-*  
*lius.*  
 ranunculacearum.  
 rubigo.  
 cylindrospora.  
 polygonorum.  
 Rosæ.  
 caprearum.  
 leguminosarum.  
 candida. On *Lepidium latifo-*  
*lium.* Grand Cobo.  
 primulæ.  
 hypericorum.  
 trifolii, *Dec. apiculosa, Lk.* On  
*Medicago denticulata.*  
 —. On *Lotus hispidus.*  
 —. On pea leaves—not *ap-*  
*pendiculosa*—a very hand-  
 some species.  
 Scillarum.

IV.—On the Structure and Habits of the Orobanchaceæ.

By ARTHUR HENFREY, F.L.S.

THE discovery by Mr. Mitten of the parasitism of *Thesium*, and the extension of the same character among the Rhinanthaceæ pointed out by M. Decaisne, have given additional interest to the study of parasitical plants, and I take advantage of an opportunity I had last summer of examining our two common species of *Orobanche*, *rapum*, Thuill., and *minor*, Sutt., to call attention to some points connected with their structure and mode of growth which do not appear to have been noticed.

M. Duchartre published in the 'Ann. des Sc. nat.' Sept. 1843, an account of the anatomy of *Lathræa clandestina*, Linn., and in the 'Ann. des Sc. nat.' Aug. 1845 of *Orobanche Eryngii*, Vauch.; and in the 'Ann. des Sciences nat.' for Sept. 1847, M. Lory relates the results of his observations on the structure and physiology of *Orobanche Teucree*, Holl et Schultz., *Galii*, Duby, *major*, L., *brachysepala*, Schultz., and *cruenta*, Bert., which, as far as they go, agree with what I have noticed in *Orobanche rapum* and *minor*.

The stems of these plants present in a cross section a very